



SEQUENCE LISTING

<110> Watkins, Jeffry D.
Huse, William D.
Tang, Ying
Broek, Daniel
Brooks, Peter

<120> Humanized Collagen Antibodies and
Related Methods

<130> 66797-126 (P-IX 4976)

<140> US 09/995,529

<141> 2001-11-26

<160> 380

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<213> Mus musculus

<220>

<221> CDS

<222> (1)...(339)

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Asp Ile Val Met Thr Gln Ser Pro Ser Leu Leu Ser Val Ser Ala Gly	
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gag aag gtc act atg agc tgc aag tcc agt cag agt ctg tta aac agt	96
Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser	
20 25 30	

gga aat caa aag aac tac ttg gcc tgg tac cag cag aaa cca ggg cag	144
Gly Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln	
35 40 45	

cct cct aaa ctg ttg atc tat ggg gca tcc act agg gaa tct ggg gtc	192
Pro Pro Lys Leu Leu Ile Tyr Gly Ala Ser Thr Arg Glu Ser Gly Val	
50 55 60	

cct gat cgc ttc aca ggc agt gga tct gga acc gat ttc act ctt atc	240
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Ile	
65 70 75 80	

atc agc agt gtg cag gct gaa gac ctg gca gtt tat tac tgt cag aat	288
Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn	

	85	90	95	
gat cat agt tat ccg tac acg ttc gga ggg ggg acc aag ctg gaa ata				336
Asp His Ser Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile				
	100	105	110	

aaa 339
Lys

<210> 2
<211> 113
<212> PRT
<213> Mus musculus

<400> 2

Asp Ile Val Met Thr Gln Ser Pro Ser Leu Leu Ser Val Ser Ala Gly				
1 5 10 15				
Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser				
20 25 30				
Gly Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln				
35 40 45				
Pro Pro Lys Leu Leu Ile Tyr Gly Ala Ser Thr Arg Glu Ser Gly Val				
50 55 60				
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Ile				
65 70 75 80				
Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn				
85 90 95				
Asp His Ser Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile				
100 105 110				

Lys

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<211> 360
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<213> Mus musculus

<220>
<221> CDS
<222> (1)...(360)

<400> 3

gag gtg aag ctt ctc gag tct gga ggt ggc ctg gtg cag cct gga gga				48
Glu Val Lys Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly				
1 5 10 15				
tcc ctg aaa ctc tcc tgt gca gcc tca gga ttc gat ttt agt aga tac				96
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Ser Arg Tyr				
20 25 30				

tgg atg agt tgg gtc cgg cag gct cca ggg aaa ggg cta gaa tgg att	144
Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile	
35 40 45	
gga gaa att aat cca gat agc agt acg ata aac tat acg cca tct cta	192
Gly Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu	
50 55 60	
aag gat aaa ttc atc atc tcc aga gac aac gcc aaa aat acg ctg tac	240
Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr	
65 70 75 80	
ctg caa atg agc aaa gtg aga tct gag gac aca gcc ctt tat tac tgt	288
Leu Gln Met Ser Lys Val Arg Ser Glu Asp Thr Ala Leu Tyr Tyr Cys	
85 90 95	
gca aga ccg gtt gat ggt tac tac gat gct atg gac tac tgg ggt caa	336
Ala Arg Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Tyr Trp Gly Gln	
100 105 110	
gga acc tca gtc acc gtc tcc tca	360
Gly Thr Ser Val Thr Val Ser Ser	
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 <213> Mus musculus

<400> 4
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1 5 10 15
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Ser Arg Tyr
20 25 30
Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45
Gly Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu
50 55 60
Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80
Leu Gln Met Ser Lys Val Arg Ser Glu Asp Thr Ala Leu Tyr Tyr Cys
85 90 95
Ala Arg Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Tyr Trp Gly Gln
100 105 110
Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 5
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 <213> Homo sapiens

<400> 5

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gag agg gcc acc atc aac tgc aag tcc agc cag agt gtt tta tac agc	96
tcc aac aat aag aac tac tta gct tgg tac cag cag aaa cca gga cag	144
cct cct aag ctg ctc att tac tgg gca tct acc egg gaa tcc ggg gtc	192
cct gac cga ttc agt ggc agc ggg tct ggg aca gat ttc act ctc acc	240
atc agc agc ctg cag gct gaa gat gtg gca gtt tat tac tgt cag caa	288
tat tat agt act cct cc	305

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<211> 113

<212> PRT

<213> Homo sapiens

<400> 6

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20 25 30	
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln	
35 40 45	
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val	
50 55 60	
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr	
65 70 75 80	
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln	
85 90 95	
Asp His Ser Tyr Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile	
100 105 110	
Lys	

<210> 7

<211> 294

<212> DNA

<213> Homo sapiens

<400> 7

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tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttt agt agc tat	96
tgg atg agc tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtg	144
gcc aac ata aag caa gat gga agt gag aaa tac tat gtg gac tct gtg	192
aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat	240
ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt	288
gcg aga	294

<210> 8

<211> 120

<212> PRT

<213> Homo sapiens

<400> 8

Glu	Val	Gln	Leu	Val	Glu	Ser	Gly	Gly	Gly	Leu	Val	Gln	Pro	Gly	Gly		
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Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Ser	Tyr		
		20						25					30				
Trp	Met	Ser	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val		
		35					40					45					
Ala	Asn	Ile	Lys	Gln	Asp	Gly	Ser	Glu	Lys	Tyr	Tyr	Val	Asp	Ser	Val		
	50					55					60						
Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ala	Lys	Asn	Ser	Leu	Tyr		
65					70				75					80			
Leu	Gln	Met	Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys		
			85					90					95				
Ala	Arg	Pro	Asp	Tyr	Tyr	Tyr	Tyr	Tyr	Gly	Met	Asp	Val	Trp	Gly	Gln		
		100						105					110				
Gly	Thr	Thr	Val	Thr	Val	Ser	Ser										
		115					120										

<210> 9

<211> 336

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1)...(336)

<400> 9

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Asp	Val	Leu	Met	Thr	Gln	Thr	Pro	Leu	Ser	Leu	Pro	Val	Ser	Leu	Gly		
1				5				10					15				
gat	caa	gcc	tcc	atc	tct	tgc	aga	tct	agt	cag	agc	att	gta	cat	agt		96
Asp	Gln	Ala	Ser	Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	Ile	Val	His	Ser		
		20						25					30				
aat	gga	aac	acc	tat	tta	gaa	tgg	tac	ctg	cag	aaa	cca	ggc	cag	tct		144
Asn	Gly	Asn	Thr	Tyr	Leu	Glu	Trp	Tyr	Leu	Gln	Lys	Pro	Gly	Gln	Ser		
		35					40					45					
cca	aag	ctc	ctg	atc	tac	aaa	gtt	tcc	aac	cga	ttt	tct	ggc	gtc	cca		192
Pro	Lys	Leu	Leu	Ile	Tyr	Lys	Val	Ser	Asn	Arg	Phe	Ser	Gly	Val	Pro		
	50					55					60						
gac	agg	ttc	agt	ggc	agt	gga	tca	ggg	aca	gat	ttc	aca	ctc	aag	atc		240
Asp	Arg	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Lys	Ile		
65					70				75					80			
agc	aga	gtg	gag	gct	gag	gat	ctg	gga	gtt	tat	tac	tgc	ttt	caa	ggc		288
Ser	Arg	Val	Glu	Ala	Glu	Asp	Leu	Gly	Val	Tyr	Tyr	Cys	Phe	Gln	Gly		
				85				90						95			

tca cat gtt ccg tgg acg ttc ggt gga ggc acc aag ctg gaa atc aaa 336
 Ser His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 10
 <211> 112
 <212> PRT
 <213> Mus musculus

<400> 10
 Asp Val Leu Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly
 1 5 10 15
 Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Ser
 20 25 30
 Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser
 35 40 45
 Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
 65 70 75 80
 Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly
 85 90 95
 Ser His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 11
 <211> 369
 <212> DNA
 <213> Mus musculus

<220>
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 <222> (1)...(369)

<400> 11
 cag gtt act ctg aaa gag act ggc cct ggg ata ttg cag ccc tcc cag 48
 Gln Val Thr Leu Lys Glu Thr Gly Pro Gly Ile Leu Gln Pro Ser Gln
 1 5 10 15
 acc ctc agt ctg act tgt tct ttc tct ggg ttt tca ctg agc act tct 96
 Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
 20 25 30
 ggt atg ggt gta ggc tgg att cgt cag cct tca gga gag ggt cta gag 144
 Gly Met Gly Val Gly Trp Ile Arg Gln Pro Ser Gly Glu Gly Leu Glu
 35 40 45
 tgg ctg gca gac att tgg tgg gat gac aat aag tac tat aac cca tcc 192
 Trp Leu Ala Asp Ile Trp Trp Asp Asp Asn Lys Tyr Tyr Asn Pro Ser
 50 55 60

ctg aag agc cgg ctc aca atc tcc aag gat acc tcc agc aac cag gta	240
Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Ser Asn Gln Val	
65 70 75 80	

ttc ctc aag atc acc agt gtg gac act gca gat act gcc act tac tac	288
Phe Leu Lys Ile Thr Ser Val Asp Thr Ala Asp Thr Ala Thr Tyr Tyr	
85 90 95	

tgt gct cga aga gct aac tat ggt aac ccc tac tat gct atg gac tac	336
Cys Ala Arg Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr	
100 105 110	

tgg ggt caa gga acc tca gtc acc gtc tcc tca	369
Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser	
115 120	

<210> 12
 <211> 123
 <212> PRT
 <213> Mus musculus

<400> 12															
Gln Val Thr Leu Lys Glu Thr Gly Pro Gly Ile Leu Gln Pro Ser Gln															
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Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser															
20 25 30															
Gly Met Gly Val Gly Trp Ile Arg Gln Pro Ser Gly Glu Gly Leu Glu															
35 40 45															
Trp Leu Ala Asp Ile Trp Trp Asp Asp Asn Lys Tyr Tyr Asn Pro Ser															
50 55 60															
Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Ser Asn Gln Val															
65 70 75 80															
Phe Leu Lys Ile Thr Ser Val Asp Thr Ala Asp Thr Ala Thr Tyr Tyr															
85 90 95															
Cys Ala Arg Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr															
100 105 110															
Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser															
115 120															

<210> 13
 <211> 305
 <212> DNA
 <213> Homo sapiens

<400> 13															
gat att gtg atg acc cag act cca ctc tcc ctg ccc gtc acc cct gga	48														
gag ccg gcc tcc atc tcc tgc agg tct agt cag agc ctc ttg gat agt	96														
gat gat gga aac acc tat ttg gac tgg tac ctg cag aag cca ggg cag	144														
tct cca cag ctc ctg atc tat acg ctt tcc tat cgg gcc tct gga gtc	192														
cca gac agg ttc agt ggc agt ggg tca ggc act gat ttc aca ctg aaa	240														

atc agc agg gtg gag gct gag gat gtt gga gtt tat tac tgc atg caa 288
cgt ata gag ttt cct tc 305

<210> 14
<211> 111
<212> PRT
<213> Homo sapiens

<400> 14
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1 5 10 15
Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu Asp Ser
20 25 30
Asp Gly Asn Thr Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln Ser
35 40 45
Pro Gln Leu Leu Ile Tyr Thr Leu Ser Tyr Arg Ala Ser Gly Val Pro
50 55 60
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80
Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln Ser
85 90 95
His Val Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 15
<211> 288
<212> DNA
<213> Homo sapiens

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acctgcacct tctctgggtt ctcactcagc actagtggaa tgcgtgtgag ctggatccgt 120
cagccccccag ggaaggecct ggagtggctt gcacgcattg attggg atg atg ata 175
aat tct aca gca cat ctc tga agaccaggct caccatctcc aaggacacct 226
ccaaaaacca ggtggtcctt acaatgacca acatggaccc tgtggacaca gccacgtatt 286
ac 288

<210> 16
<211> 123
<212> PRT
<213> Homo sapiens

<400> 16
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Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ser
20 25 30
Gly Met Arg Val Ser Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu
35 40 45
Trp Leu Ala Arg Ile Asp Trp Asp Asp Asp Lys Phe Tyr Ser Thr Ser
50 55 60
Leu Lys Thr Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val

65		70		75		80									
Val	Leu	Thr	Met	Thr	Asn	Met	Asp	Pro	Val	Asp	Thr	Ala	Thr	Tyr	Tyr
				85					90					95	
Cys	Ala	Arg	Arg	Ala	Asn	Tyr	Tyr	Tyr	Tyr	Tyr	Tyr	Ala	Met	Asp	Val
			100					105					110		
Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser					
		115					120								

<210> 17
 <211> 340
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)...(339)

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Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Thr Pro Gly															
1				5					10					15	
gag ccg gcc tcc atc tcc tgc agg tct agt cag agc ctc ttg gat agt															96
Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu Asp Ser															
			20					25					30		
gat gat gga aac acc tat ttg gac tgg tac ctg cag aag cca ggg cag															144
Asp Asp Gly Asn Thr Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln															
		35					40				45				
tct cca cag ctc ctg atc tat acg ctt tcc tat cgg gcc tct gga gtc															192
Ser Pro Gln Leu Leu Ile Tyr Thr Leu Ser Tyr Arg Ala Ser Gly Val															
	50					55				60					
cca gac agg ttc agt ggc agt ggg tca ggc act gat ttc aca ctg aaa															240
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys															
65					70				75					80	
atc agc agg gtg gag gct gag gat gtt gga gtt tat tac tgc atg caa															288
Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln															
			85					90					95		
cgg ttc aca tgt tcc gtg gac gtt cgg cca agg gac caa ggt gga aat															336
Arg Phe Thr Cys Ser Val Asp Val Arg Pro Arg Asp Gln Gly Gly Asn															
		100					105					110			
caa a															340
Gln															

<210> 18

<211> 113
 <212> PRT
 <213> Homo sapiens

<400> 18
 Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Thr Pro Gly
 1 5 10 15
 Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu Asp Ser
 20 25 30
 Asp Asp Gly Asn Thr Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln
 35 40 45
 Ser Pro Gln Leu Leu Ile Tyr Thr Leu Ser Tyr Arg Ala Ser Gly Val
 50 55 60
 Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys
 65 70 75 80
 Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln
 85 90 95
 Arg Phe Thr Cys Ser Val Asp Val Arg Pro Arg Asp Gln Gly Gly Asn
 100 105 110
 Gln

<210> 19
 <211> 51
 <212> DNA
 <213> Mus musculus

<220>
 <221> CDS
 <222> (1)...(51)

<400> 19
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 1 5 10 15
 gcc 51
 Ala

<210> 20
 <211> 17
 <212> PRT
 <213> Mus musculus

<400> 20
 Lys Ser Ser Gln Ser Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu
 1 5 10 15
 Ala

<210> 21
<211> 21
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(21)

<400> 21
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Gly Ala Ser Thr Arg Glu Ser
1 5

21

<210> 22
<211> 7
<212> PRT
<213> Mus musculus

<400> 22
Gly Ala Ser Thr Arg Glu Ser
1 5

<210> 23
<211> 27
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(27)

<400> 23
cag aat gat cat agt tat ccg tac acg
Gln Asn Asp His Ser Tyr Pro Tyr Thr
1 5

27

<210> 24
<211> 9
<212> PRT
<213> Mus musculus

<400> 24
Gln Asn Asp His Ser Tyr Pro Tyr Thr
1 5

<210> 25
<211> 30

<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(30)

<400> 25
gga ttc gat ttt agt aga tac tgg atg agt 30
Gly Phe Asp Phe Ser Arg Tyr Trp Met Ser
1 5 10

<210> 26
<211> 10
<212> PRT
<213> Mus musculus

<400> 26
Gly Phe Asp Phe Ser Arg Tyr Trp Met Ser
1 5 10

<210> 27
<211> 51
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(51)

<400> 27
gaa att aat cca gat agc agt acg ata aac tat acg cca tct cta aag 48
Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu Lys
1 5 10 15

gat 51
Asp

<210> 28
<211> 17
<212> PRT
<213> Mus musculus

<400> 28
Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu Lys
1 5 10 15
Asp

<210> 29
<211> 33
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(33)

<400> 29
ccg gtt gat ggt tac tac gat gct atg gac tac 33
Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

<210> 30
<211> 11
<212> PRT
<213> Mus musculus

<400> 30
Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

<210> 31
<211> 48
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(48)

<400> 31
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Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Asn Thr Tyr Leu Glu
1 5 10 15

<210> 32
<211> 16
<212> PRT
<213> Mus musculus

<400> 32
Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Asn Thr Tyr Leu Glu
1 5 10 15

<210> 33

<211> 21
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(21)

<400> 33
aaa gtt tcc aac cga ttt tct
Lys Val Ser Asn Arg Phe Ser
1 5

21

<210> 34
<211> 7
<212> PRT
<213> Mus musculus

<400> 34
Lys Val Ser Asn Arg Phe Ser
1 5

<210> 35
<211> 27
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(27)

<400> 35
ttt caa ggt tca cat gtt ccg tgg acg
Phe Gln Gly Ser His Val Pro Trp Thr
1 5

27

<210> 36
<211> 9
<212> PRT
<213> Mus musculus

<400> 36
Phe Gln Gly Ser His Val Pro Trp Thr
1 5

<210> 37
<211> 36
<212> DNA
<213> Mus musculus

<220>

<221> CDS

<222> (1)...(36)

<400> 37

ggg ttt tca ctg agc act tct ggt atg ggt gta ggc
Gly Phe Ser Leu Ser Thr Ser Gly Met Gly Val Gly
1 5 10

36

<210> 38

<211> 12

<212> PRT

<213> Mus musculus

<400> 38

Gly Phe Ser Leu Ser Thr Ser Gly Met Gly Val Gly
1 5 10

<210> 39

<211> 48

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1)...(48)

<400> 39

gac att tgg tgg gat gac aat aag tac tat aac cca tcc ctg aag agc 48
Asp Ile Trp Trp Asp Asp Asn Lys Tyr Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 40

<211> 16

<212> PRT

<213> Mus musculus

<400> 40

Asp Ile Trp Trp Asp Asp Asn Lys Tyr Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 41

<211> 39

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<213> Mus musculus

<220>

<221> CDS

<222> (1)...(39)

<400> 41

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Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr
1 5 10

39

<210> 42

<211> 13

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<213> Mus musculus

<400> 42

Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 43

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 43

Gly Phe Asp Phe Ser His Tyr Trp Met Ser
1 5 10

<210> 44

<211> 10

<212> PRT

<213> Artificial Sequence

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<223> synthetic antibody mutation

<400> 44

Gly Phe Asp Phe Ser Arg Tyr Trp Ile Ser
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<210> 45

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 45

Gly Phe Asp Phe Ser Arg Tyr Trp Met Thr
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<210> 46

<211> 10

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<220>

<223> synthetic antibody mutation

<400> 46

Gly Phe Asp Phe Ser Arg Tyr Trp Met Ala
1 5 10

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<211> 10

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<400> 47

Gly Phe Asp Phe Ser Arg Tyr Trp Met Gly
1 5 10

<210> 48

<211> 17

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<400> 48

Glu Ile Asn Pro Asp Ser Ser Thr Ala Asn Tyr Thr Pro Ser Leu Lys
1 5 10 15
Asp

<210> 49

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Artificial sequence

<400> 49

Glu Ile Asn Pro Asp Ser Ser Thr Ser Asn Tyr Thr Pro Ser Leu Asp
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<210> 50

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Artificial sequence

<400> 50

Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Tyr Leu Lys
1 5 10 15
Asp

<210> 51

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 51

Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ala Leu Lys
1 5 10 15
Asp

<210> 52

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Artificial sequence

<400> 52

Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro His Leu Lys
1 5 10 15
Asp

<210> 53
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 53
Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Gly Leu Lys
1 5 10 15
Asp

<210> 54
<211> 17
<212> PRT
<213> Artificial Sequence

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<400> 54
Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu Gln
1 5 10 15
Asp

<210> 55
<211> 17
<212> PRT
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<220>
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Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu Lys
1 5 10 15
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<210> 56
<211> 11
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<220>
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<400> 56
Pro Val Pro Gly Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

<210> 57
<211> 11
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<400> 57
Pro Val Gly Gly Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

<210> 58
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<400> 58
Pro Val Thr Gly Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

<210> 59
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<400> 59
Pro Val Ala Gly Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

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<400> 60

Pro Val Asp Pro Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

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Pro Val Asp Ala Tyr Tyr Asp Ala Met Asp Tyr
1 5 10

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1 5 10

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<400> 64
Pro Val Asp Gly Tyr Tyr Asp Ala Met Asp Asn

1 5 10

<210> 65
<211> 17
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<220>
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Lys Ser Ser Arg Ser Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 66
<211> 17
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<400> 66
Lys Ser Ser Ser Ser Leu Leu Asn Ser Gly Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 67
<211> 17
<212> PRT
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<400> 67
Lys Ser Ser Gln Ser Leu Leu Ser Ser Gly Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 68
<211> 17
<212> PRT
<213> Artificial Sequence

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<223> synthetic antibody mutation

<400> 68

Lys Ser Ser Gln Ser Leu Leu Asn Tyr Gly Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 69

<211> 17

<212> PRT

<213> Artificial Sequence

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<223> synthetic antibody mutation

<400> 69

Lys Ser Ser Gln Ser Leu Leu Asn Trp Gly Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 70

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 70

Lys Ser Ser Gln Ser Leu Leu Asn His Gly Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 71

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 71

Lys Ser Ser Gln Ser Leu Leu Asn Arg Gly Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 72
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 72
Lys Ser Ser Gln Ser Leu Leu Asn Ser Tyr Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 73
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 73
Lys Ser Ser Gln Ser Leu Leu Asn Ser Arg Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 74
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 74
Lys Ser Ser Gln Ser Leu Leu Asn Ser His Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 75
<211> 17
<212> PRT
<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 75

Lys	Ser	Ser	Gln	Ser	Leu	Leu	Asn	Ser	Ile	Asn	Gln	Lys	Asn	Tyr	Leu
1				5					10					15	
Ala															

<210> 76

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 76

Lys	Ser	Ser	Gln	Ser	Leu	Leu	Asn	Ser	Gly	Asn	Lys	Lys	Asn	Tyr	Leu
1				5					10					15	
Ala															

<210> 77

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 77

Gln	Asn	Asp	His	Gln	Tyr	Pro	Tyr	Thr
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<210> 78

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 78

Gln	Asn	Asp	His	Gly	Tyr	Pro	Tyr	Thr
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<210> 79

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 79

Gln Asn Asp His Leu Tyr Pro Tyr Thr
1 5

<210> 80

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 80

Gln Asn Asp His Ala Tyr Pro Tyr Thr
1 5

<210> 81

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> synthetic antibody mutation

<400> 81

Gln Asn Asp His Thr Tyr Pro Tyr Thr
1 5

<210> 82

<211> 9

<212> PRT

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<223> synthetic antibody mutation

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Gln Asn Asp His Val Tyr Pro Tyr Thr
1 5

<210> 83

<211> 9

<212> PRT

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<220>

<223> synthetic antibody mutation

<400> 83

Gln Asn Asp His Ser Asn Pro Tyr Thr

1

5

<210> 84

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> synthetic antibody mutation

<400> 84

Gln Asn Asp His Ser Ser Pro Tyr Thr

1

5

<210> 85

<211> 9

<212> PRT

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<223> synthetic antibody mutation

<400> 85

Gln Asn Asp His Ser Pro Pro Tyr Thr

1

5

<210> 86

<211> 9

<212> PRT

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<223> synthetic antibody mutation

<400> 86

Gln Asn Asp His Ser Met Pro Tyr Thr

1

5

<210> 87

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 87

Gly Phe Ser Leu Ser Thr Pro Gly Met Gly Val Gly
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<210> 88

<211> 12

<212> PRT

<213> Artificial Sequence

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<223> synthetic antibody mutation

<400> 88

Gly Phe Ser Leu Ser Thr Trp Gly Met Gly Val Gly
1 5 10

<210> 89

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 89

Gly Phe Ser Leu Ser Thr Ser Gly Met Gly Val Trp
1 5 10

<210> 90

<211> 12

<212> PRT

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<223> synthetic antibody mutation

<400> 90

Gly Phe Ser Leu Ser Thr Ser Gly Met Gly Val Leu
1 5 10

<210> 91

<211> 12

<212> PRT

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<223> synthetic antibody mutation

<400> 91

Gly Phe Ser Leu Ser Thr Ser Gly Met Gly Val Ala
1 5 10

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<211> 16

<212> PRT

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<223> synthetic antibody mutation

<400> 92

Asp Ile Trp Trp Asp Asp Asn Lys Tyr Ser Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 93

<211> 16

<212> PRT

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<223> synthetic antibody mutation

<400> 93

Asp Ile Trp Trp Asp Asp Asn Lys Tyr Ala Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 94

<211> 16

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<223> synthetic antibody mutation

<400> 94

Asp Ile Trp Trp Asp Asp Asn Lys Tyr Pro Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 95

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 95

Asp Ile Trp Trp Asp Asp Asn Lys Tyr Tyr Asn Pro Ser Leu Pro Ser
1 5 10 15

<210> 96

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 96

Pro Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 97

<211> 13

<212> PRT

<213> Artificial Sequence

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<223> synthetic antibody mutation

<400> 97

Gln Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 98

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 98

Leu Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 99

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 99

Thr Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr
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<210> 100

<211> 13

<212> PRT

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<223> synthetic antibody mutation

<400> 100

Val Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Tyr
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<210> 101

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 101

Arg Ala Asn Tyr Gly Val Pro Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 102

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 102

Arg Ala Asn Tyr Gly Trp Pro Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 103

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 103

Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Gln Asp Tyr
1 5 10

<210> 104

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 104

Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Asn Asp Tyr
1 5 10

<210> 105

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 105

Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Thr Asp Tyr
1 5 10

<210> 106

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 106

Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Lys
1 5 10

<210> 107

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 107

Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Thr

1 5 10

<210> 108
<211> 13
<212> PRT
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<220>
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<400> 108
Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp Met
1 5 10

<210> 109
<211> 13
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<220>
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<400> 109
Arg Ala Asn Tyr Gly Asn Pro Tyr Tyr Ala Met Asp His
1 5 10

<210> 110
<211> 16
<212> PRT
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<220>
<223> synthetic antibody mutation

<400> 110
Arg Ser Ser Gln Ser Ile Pro His Ser Asn Gly Asn Thr Tyr Leu Glu
1 5 10 15

<210> 111
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 111
Arg Ser Ser Gln Ser Ile Trp His Ser Asn Gly Asn Thr Tyr Leu Glu
1 5 10 15

<210> 112

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 112

Arg	Ser	Ser	Gln	Ser	Ile	Val	Leu	Ser	Asn	Gly	Asn	Thr	Tyr	Leu	Glu
1				5					10					15	

<210> 113

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 113

Arg	Ser	Ser	Gln	Ser	Ile	Val	Ser	Ser	Asn	Gly	Asn	Thr	Tyr	Leu	Glu
1				5					10					15	

<210> 114

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 114

Arg	Ser	Ser	Gln	Ser	Ile	Val	His	Trp	Asn	Gly	Asn	Thr	Tyr	Leu	Glu
1				5					10					15	

<210> 115

<211> 16

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<400> 115

Arg	Ser	Ser	Gln	Ser	Ile	Val	His	Ser	Tyr	Gly	Asn	Thr	Tyr	Leu	Glu
1				5					10					15	

<210> 116
<211> 16
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<400> 116
Arg Ser Ser Gln Ser Ile Val His Ser Trp Gly Asn Thr Tyr Leu Glu
1 5 10 15

<210> 117
<211> 16
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<213> Artificial Sequence

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<400> 117
Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Tyr Thr Tyr Leu Glu
1 5 10 15

<210> 118
<211> 16
<212> PRT
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<220>
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<400> 118
Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Asn Thr Tyr Phe Glu
1 5 10 15

<210> 119
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
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<400> 119
Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Asn Thr Tyr Val Glu
1 5 10 15

<210> 120
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
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<400> 120
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<210> 121
<211> 7
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<220>
<223> synthetic antibody mutation

<400> 121
Lys Ala Ser Asn Arg Phe Ser
1 5

<210> 122
<211> 7
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<400> 122
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1 5

<210> 123
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<220>
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<400> 123
Lys Val Ser Asn Leu Phe Ser
1 5

<210> 124

<211> 7
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<400> 124
Lys Val Ser Asn Arg Phe Trp
1 5

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1 5

<210> 126
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<400> 126
Val Gln Gly Ser His Val Pro Trp Thr
1 5

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His Gln Gly Ser His Val Pro Trp Thr
1 5

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<400> 128
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1 5

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1 5

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Phe Gln Ser Ser His Val Pro Trp Thr
1 5

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1 5

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Phe Gln Gly Ser Leu Val Pro Trp Thr

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Phe Gln Gly Ser Thr Val Pro Trp Thr

1

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<210> 135

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<400> 135

Phe Gln Gly Ser Ser Val Pro Trp Thr

1

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<210> 136

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<400> 136

Phe Gln Gly Ser Ala Val Pro Trp Thr
1 5

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<400> 137

Phe Gln Gly Ser Gln Val Pro Trp Thr
1 5

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<400> 138

Phe Gln Gly Ser His Thr Pro Trp Thr
1 5

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<400> 139

Phe Gln Gly Ser His Val Pro Trp Ala
1 5

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Phe Gln Gly Ser His Val Pro Trp Arg

1

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<210> 141

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<400> 141

Phe Gln Gly Ser His Val Pro Trp His

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<210> 142

<211> 9

<212> PRT

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<223> synthetic antibody mutation

<400> 142

Phe Gln Gly Ser His Val Pro Trp Lys

1

5

<210> 143

<211> 9

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<223> synthetic antibody mutation

<400> 143

Phe Gln Gly Ser His Val Pro Trp Ile

1

5

<210> 144

<211> 16

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<223> synthetic antibody mutation

<400> 144

Asp Ile Trp Trp Asp Asp Asn Lys Tyr Thr Asn Pro Ser Leu Lys Ser
1 5 10 15

<210> 145

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 145

Phe Gln Gly Ser His Phe Pro Trp Thr
1 5

<210> 146

<211> 16

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<223> synthetic antibody mutation

<400> 146

Arg Ser Ser Gln Ser Ile Val His Ser Gln Gly Asn Thr Tyr Leu Glu
1 5 10 15

<210> 147

<211> 12

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<223> synthetic antibody mutation

<400> 147

Gly Phe Ser Leu Ser Thr Pro Gly Met Gly Val Trp
1 5 10

<210> 148

<211> 12

<212> PRT

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<223> synthetic antibody mutation

<400> 148

Gly Phe Ser Leu Ser Thr Pro Gly Met Gly Val Ala
1 5 10

<210> 149

<211> 16

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<223> synthetic antibody mutation

<400> 149

Arg Ser Ser Gln Ser Ile Val Ser Ser Trp Gly Asn Thr Tyr Leu Glu
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<210> 150

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<400> 150

Arg Ser Ser Gln Ser Ile Val Ser Ser Tyr Gly Asn Thr Tyr Leu Glu
1 5 10 15

<210> 151

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<223> synthetic antibody mutation

<400> 151

Arg Ser Ser Gln Ser Ile Val Ser Ser Gln Gly Asn Thr Tyr Leu Glu
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<210> 152

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<400> 152

Arg Ser Ser Gln Ser Ile Val His Ser Gln Gly Asn Thr Tyr Phe Glu
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<400> 153
Arg Ser Ser Gln Ser Ile Val Ser Ser Trp Gly Asn Thr Tyr Phe Glu
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<210> 154
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<400> 154
Glu Ile Asn Pro Asp Ser Ser Thr Ala Asn Tyr Thr Pro Ala Leu Lys
1 5 10 15
Asp

<210> 155
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 155
Glu Ile Asn Pro Asp Ser Ser Thr Ala Asn Tyr Thr Pro Tyr Leu Lys
1 5 10 15
Asp

<210> 156
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 156
Glu Ile Asn Pro Asp Ser Ser Thr Ala Asn Tyr Thr Pro His Leu Lys

1	5	10	15
Asp			

<210> 157
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 157
Lys Ser Ser Gln Ser Leu Leu Asn Trp Tyr Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 158
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic antibody mutation

<400> 158
Lys Ser Ser Gln Ser Leu Leu Asn Tyr Tyr Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 159
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 159
Lys Ser Ser Gln Ser Leu Leu Asn Tyr His Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 160
<211> 17
<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 160

Lys Ser Ser Gln Ser Leu Leu Asn Arg Tyr Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 161

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 161

Lys Ser Ser Gln Ser Leu Leu Asn Trp His Asn Gln Lys Asn Tyr Leu
1 5 10 15
Ala

<210> 162

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 162

Glu Ile Asn Pro Asp Ser Ser Thr Val Asn Tyr Thr Pro Ser Leu Lys
1 5 10 15
Asp

<210> 163

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 163

tctctggaga tggagaattt acgtactgct atctggatt

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<211> 41
<212> DNA
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ctaagtagtt cttttggttg ttataacaga ctctggctgg a 41

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<211> 51
<212> DNA
<213> Artificial Sequence

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<223> Primer

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tggagcctgg cggacccagg hcatccaata tctactaaag gtgaatccag a 51

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<211> 65
<212> DNA
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<400> 166
tctctggaga tggatgaatyt atccttttagg gmtggcgat agttggccgt actgctatct 60
ggatt 65

<210> 167
<211> 65
<212> DNA
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<220>
<223> Primer

<400> 167
tctctggaga tggatgaatyt atccttttagg trtggcgat agttggccgt actgctatct 60
ggatt 65

<210> 168
<211> 46
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<220>
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<400> 168
ctaagtagtt cttttggttg trgtrgytta acagactctg gctgga 46

<210> 169
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<210> 174

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<211> 57

<212> DNA

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tgggggctga cggatccacm acacacccat tccacragtg ctgagtgaga acccaga 57

<210> 176

<211> 57

<212> DNA

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<400> 176

tgggggctga cggatccags ccacacccat tccacractg ctgagtgaga acccaga 57

<210> 177

<211> 40

<212> DNA

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<400> 177

gctcttcaga gatggggttag vgtattttatt gtcatccac 40

<210> 178

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 178

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<210> 179

<211> 60

<212> DNA

<213> Artificial Sequence

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<212> DNA

<213> Artificial Sequence

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<211> 60

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<400> 184
ttggtgctga tgttctgg 18

<210> 185
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<400> 185
atcttcttgc tgttctgg 18

<210> 186
<211> 18
<212> DNA
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<400> 186
tgggtgctgc tgctctgg 18

<210> 187
<211> 18
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<400> 187

gggctgcttg tgctctgg

18

<210> 188

<211> 18

<212> DNA

<213> Artificial Sequence

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<223> Primer

<400> 188

ggaatcttgt tgctctgg

18

<210> 189

<211> 18

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<223> Primer

<400> 189

rtrttsctgc tgctrctg

18

<210> 190

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 190

ggctctctgt tgctctgt

18

<210> 191

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<400> 191

atatttctac tgctctgt

18

<210> 192

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<400> 192
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<210> 193
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<210> 194
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<400> 194
ctcarmttga ttttcct 17

<210> 195
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<400> 195
tggrtcattst ttttcct 17

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<400> 196
tkstttttc ttttcct 17

<210> 197
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<400> 197
tgtatcatsc tcttctt 17

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<400> 198
tggrtctttc tcttttt 17

<210> 199
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<400> 199
ttaaactggg tttttct 17

<210> 200
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<220>
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<400> 200
gkgctgytcy tctgcct 17

<210> 201
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<400> 201

ttaagtcttc tgtacctg 18

<210> 202

<211> 20

<212> DNA

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<223> Primer

<400> 202

tcagtaactg caggtgtcca 20

<210> 203

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 203

ttttaaaagg tgtccagtgt 20

<210> 204

<211> 20

<212> DNA

<213> Artificial Sequence

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<223> Primer

<400> 204

gcaacagcta caggtgtcca 20

<210> 205

<211> 20

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<400> 205

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<400> 206
atttccaagc tgtgtcctgt cc 22

<210> 207
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<400> 207
ctcctgtcag gaactgcagg tgt 23

<210> 208
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<400> 208
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<400> 209
ctgttsacag chttckgg t 21

<210> 210
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<400> 210
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<400> 211

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<210> 212

<211> 27

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<400> 212

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27

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<211> 24

<212> DNA

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<220>

<223> Primer

<400> 213

gacatttggg aaggactgac tctc

24

<210> 214

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 214

cagggggctc tcgcaggaga cgag

24

<210> 215

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Primer

<400> 215

atcttcttgc tggttctgggt atctggaacc tgtggg

36

<210> 216

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Primer

<400> 216

ttggtgctga tgttctggat tcctgcttcc agcagt 36

<210> 217

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 217

gtggacgttc ggccaaggga ccaaggtgga aatcaaac 38

<210> 218

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 218

tgtacacttt tggccagggg accaagctgg agatcaaac 39

<210> 219

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 219

attactacta ctactacggt atggacgtct ggggccaagg gaccacggtc accgtctcct 60
cag 63

<210> 220

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 220

ttactcgctg cccaaccagc catggcc 27

<210> 221
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<212> DNA
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<220>
<223> primer

<400> 221
gacagatggt gcagccacag t 21

<210> 222
<211> 27
<212> DNA
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<220>
<223> primer

<400> 222
ttactgttta cccctgtgac aaaagcc 27

<210> 223
<211> 21
<212> DNA
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<220>
<223> primer

<400> 223
gaagaccgat gggcccttgg t 21

<210> 224
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 44, 45
<223> n = A,T,C or G

<400> 224
cttgggtcccc tggccaaaag tgtacggata actatgatca ttmnacagt aataaactgc 60
cacatc 66

<210> 225
<211> 66
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 41, 42

<223> n = A,T,C or G

<400> 225

cttggtcccc tggccaaaag tgtacggata actatgatcm nnctgacagt aataaactgc 60
cacatc 66

<210> 226

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 38, 39

<223> n = A,T,C or G

<400> 226

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cacatc 66

<210> 227

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 35, 36

<223> n = A,T,C or G

<400> 227

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cacatc 66

<210> 228

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 228

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cacatc 66

<210> 229

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 229

cttggtcccc tggccaaaag tgtacggmn actatgatca ttctgacagt aataaactgc 60
cacatc 66

<210> 230

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 230

cttggtcccc tggccaaaag tgtamnata actatgatca ttctgacagt aataaactgc 60
cacatc 66

<210> 231

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 231

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cacatc

66

<210> 232

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

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<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 232

cttggtcccc tggccaaamn ngtagcgata actatgatca ttctgacagt aataaactgc 60
cacatc 66

<210> 233

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 50, 51

<223> n = A,T,C or G

<400> 233

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gtaatacac 69

<210> 234

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

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<221> misc_feature

<222> 47, 48

<223> n = A,T,C or G

<400> 234

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gtaatacac 69

<210> 235

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

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<222> 44, 45

<223> n = A,T,C or G

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gtaatacac 69

<210> 236

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 41, 42

<223> n = A,T,C or G

<400> 236

cgtgggttcct tgccccagc agtccatagc atcgtagtam nnatcaaccg gtctcgaca 60
gtaatacac 69

<210> 237

<211> 69

<212> DNA

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<221> misc_feature

<222> 38, 39

<223> n = A,T,C or G

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gtaatacac 69

<210> 238

<211> 69

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<221> misc_feature
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gtaatacac 69

<210> 239
<211> 69
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<222> 32, 33
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gtaatacac 69

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<222> 29, 30
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gtaatacac 69

<210> 241
<211> 69
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<221> misc_feature
<222> 26, 27
<223> n = A,T,C or G

<400> 241

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gtaatacac 69

<210> 242
<211> 69
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<221> misc_feature
<222> 23, 24
<223> n = A,T,C or G

<400> 242
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gtaatacac 69

<210> 243
<211> 69
<212> DNA
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<221> misc_feature
<222> 20, 21
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<400> 243
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gtaatacac 69

<210> 244
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<221> misc_feature
<222> 44, 45
<223> n = A,T,C or G

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aacatc 66

<210> 245
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<221> misc_feature
<222> 41, 42
<223> n = A,T,C or G

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aacatc 66

<210> 246
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aacatc 66

<210> 247
<211> 66
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<221> misc_feature
<222> 35, 36
<223> n = A,T,C or G

<400> 247
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aacatc 66

<210> 248
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<222> 32, 33

<223> n = A,T,C or G

<400> 248

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aacatc 66

<210> 249

<211> 66

<212> DNA

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<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 249

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aacatc 66

<210> 250

<211> 66

<212> DNA

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<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 250

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aacatc 66

<210> 251

<211> 66

<212> DNA

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<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

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aacatc 66

<210> 252
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 20, 21
<223> n = A,T,C or G

<400> 252
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aacatc 66

<210> 253
<211> 75
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<221> misc_feature
<222> 56, 57
<223> n = A,T,C or G

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agcacagtaa tacgt 75

<210> 254
<211> 75
<212> DNA
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<221> misc_feature
<222> 53, 54
<223> n = A,T,C or G

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agcacagtaa tacgt 75

<210> 255

<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 50, 51
<223> n = A,T,C or G

<400> 255
cgtggttcct tgccccagc agtccatagc atagtagggg ttaccatamn nagctcttcg 60
agcacagtaa tacgt 75

<210> 256
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 47, 48
<223> n = A,T,C or G

<400> 256
cgtggttcct tgccccagc agtccatagc atagtagggg ttaccmnnngt tagctcttcg 60
agcacagtaa tacgt 75

<210> 257
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 44, 45
<223> n = A,T,C or G

<400> 257
cgtggttcct tgccccagc agtccatagc atagtagggg ttmnnatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 258
<211> 75
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 41, 42

<223> n = A,T,C or G

<400> 258

cgtgggttcct tgccccccagt agtccatagc atagtagggm nnaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 259

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 38, 39

<223> n = A,T,C or G

<400> 259

cgtgggttcct tgccccccagt agtccatagc atagtamngg ttaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 260

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 35, 36

<223> n = A,T,C or G

<400> 260

cgtgggttcct tgccccccagt agtccatagc atamngggg ttaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 261

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 261
cgtgggttcct tgccccccagt agtccatagc mnngtagggg ttaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 262
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 29, 30
<223> n = A,T,C or G

<400> 262
cgtgggttcct tgccccccagt agtccatmnn atagtagggg ttaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 263
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 26, 27
<223> n = A,T,C or G

<400> 263
cgtgggttcct tgccccccagt agtcmnnagc atagtagggg ttaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 264
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 23, 24
<223> n = A,T,C or G

<400> 264
cgtgggttcct tgccccccagt amnncatagc atagtagggg ttaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 265
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 20, 21
<223> n = A,T,C or G

<400> 265
cgtggttcct tgccccamnn gtccatagc atagtagggg ttaccatagt tagctcttcg 60
agcacagtaa tacgt 75

<210> 266
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 41, 42
<223> n = A,T,C or G

<400> 266
gttcttttgg tttccgcwgt ttaacagact ctggctggam nngcagttga tggtaggcct 60

<210> 267
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 38, 39
<223> n = A,T,C or G

<400> 267
gttcttttgg tttccgcwgt ttaacagact ctggctmnnn ttgcagttga tggtaggcct 60

<210> 268
<211> 60
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 35, 36

<223> n = A,T,C or G

<400> 268

gttcttttgg tttccgcwgt ttaacagact ctgmnnnggac ttgcagttga tggtaggcct 60

<210> 269

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 269

gttcttttgg tttccgcwgt ttaacagact mnnngctggac ttgcagttga tggtaggcct 60

<210> 270

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 270

gttcttttgg tttccgcwgt ttaacagmnn ctggctggac ttgcagttga tggtaggcct 60

<210> 271

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 271

gttcttttgg tttccgcwgt ttaamnact ctggctggac ttgcagttga tggtaggcct 60

<210> 272

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 272

gttcttttgg tttccgcwgt tmncagact ctggctggac ttgcagttga tggtaggcct 60

<210> 273

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 273

gttcttttgg tttccgcwmn ntaacagact ctggctggac ttgcagttga tggtaggcct 60

<210> 274

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 44, 45

<223> n = A,T,C or G

<400> 274

tggtttctgc tggtagcaag ctaagtagtt cttttggttt ccmngttta acagactctg 60
gct 63

<210> 275
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 41, 42
<223> n = A,T,C or G

<400> 275
tggtttctgc tggtagcaag ctaagtagtt cttttggttm nngcwgttta acagactctg 60
gct 63

<210> 276
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 38, 39
<223> n = A,T,C or G

<400> 276
tggtttctgc tggtagcaag ctaagtagtt cttttgmntt ccgcwgttta acagactctg 60
gct 63

<210> 277
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 35, 36
<223> n = A,T,C or G

<400> 277
tggtttctgc tggtagcaag ctaagtagtt cttmngttt ccgcwgttta acagactctg 60
gct 63

<210> 278
<211> 63
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 278

tggtttctgc tggtaccaag ctaagtagtt mnnttggttt ccgcwgttta acagactctg 60
gct 63

<210> 279

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 279

tggtttctgc tggtaccaag ctaagtamnn cttttggttt ccgcwgttta acagactctg 60
gct 63

<210> 280

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 280

tggtttctgc tggtaccaag ctaamnngtt cttttggttt ccgcwgttta acagactctg 60
gct 63

<210> 281

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 281

tggtttctgc tggtaccaag cmngtagtt cttttggttt ccgcwgttta acagactctg 60
gct 63

<210> 282

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 282

tggtttctgc tggtaccamn ntaagtagtt cttttggttt ccgcwgttta acagactctg 60
gct 63

<210> 283

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 38, 39

<223> n = A,T,C or G

<400> 283

gaatcggtca gggaccccg g attccctggt agatgcmnng taaatgagca gcttagg 57

<210> 284

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 35, 36

<223> n = A,T,C or G

<400> 284

gaatcggtca gggaccccg g attccctggt agamncccg taaatgagca gcttagg 57

<210> 285
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 32, 33
<223> n = A,T,C or G

<400> 285
gaatcggtca gggaccccg attccctggt mnntgccccg taaatgagca gcttagg 57

<210> 286
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 29, 30
<223> n = A,T,C or G

<400> 286
gaatcggtca gggaccccg attccctmnn agatgccccg taaatgagca gcttagg 57

<210> 287
<211> 57
<212> DNA
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<220>
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<221> misc_feature
<222> 26, 27
<223> n = A,T,C or G

<400> 287
gaatcggtca gggaccccg attcmnnggt agatgccccg taaatgagca gcttagg 57

• <210> 288
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 23, 24
<223> n = A,T,C or G

<400> 288
gaatcggtca gggaccccg amnncctggt agatgccccg taaatgagca gcttagg 57

<210> 289
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 20, 21
<223> n = A,T,C or G

<400> 289
gaatcggtca gggaccccmn nttccctggt agatgccccg taaatgagca gcttagg 57

<210> 290
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 32, 33
<223> n = A,T,C or G

<400> 290
tggagcctgg cggaccagc tcatccaata mnactaaag gtgaatccag a 51

<210> 291
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 29, 30
<223> n = A,T,C or G

<400> 291
tggagcctgg cggaccagc tcatccamnn tctactaaag gtgaatccag a 51

<210> 292

<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 26, 27
<223> n = A,T,C or G

<400> 292
tggagcctgg cggacccagc tcatmnata tctactaaag gtgaatccag a 51

<210> 293
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 23, 24
<223> n = A,T,C or G

<400> 293
tggagcctgg cggacccagc tmnnccaata tctactaaag gtgaatccag a 51

<210> 294
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 20, 21
<223> n = A,T,C or G

<400> 294
tggagcctgg cggacccamn ncatccaata tctactaaag gtgaatccag a 51

<210> 295
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature

<222> 44, 45

<223> n = A,T,C or G

<400> 295

tagagatggc gtatagttta tcgtactgct atctggattt atmngccaa yccactccag 60
ccctttc 67

<210> 296

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 41, 42

<223> n = A,T,C or G

<400> 296

tagagatggc gtatagttta tcgtactgct atctggattm nnttcgccaa yccactccag 60
ccctttc 67

<210> 297

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 38, 39

<223> n = A,T,C or G

<400> 297

tagagatggc gtatagttta tcgtactgct atctggmnnnt atttcgccaa yccactccag 60
ccctttc 67

<210> 298

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 35, 36

<223> n = A,T,C or G

<400> 298

tagagatggc gtatagttta tcgtactgct atcmnnattt atttcgccaa yccactccag 60

ccctttc

67

<210> 299

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 299

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ccctttc 67

<210> 300

<211> 67

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 300

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ccctttc 67

<210> 301

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 301

tagagatggc gtatagttta tcgtmngct atctggattt atttcgcaa yccactccag 60
ccctttc 67

<210> 302

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 302

tagagatggc gtatagttta tmnactgct atctggattt atttcgccaa yccactccag 60
ccctttc 67

<210> 303

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 303

tagagatggc gtatagttmn ncgtactgct atctggattt atttcgccaa yccactccag 60
ccctttc 67

<210> 304

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 48, 49

<223> n = A,T,C or G

<400> 304

cgttgctctc ggagatgrtg aatytatcct ttagagatgg cgtatamnt atcgtactgc 60
tatctgg 67

<210> 305

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature
<222> 45, 46
<223> n = A,T,C or G

<400> 305
cgttgtctct ggagatgrtg aatytatcct ttagagatgg cgtmnnngttt atcgactgc 60
tatctgg 67

<210> 306
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 42, 43
<223> n = A,T,C or G

<400> 306
cgttgtctct ggagatgrtg aatytatcct ttagagatgg mnnatagttt atcgactgc 60
tatctgg 67

<210> 307
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 39, 40
<223> n = A,T,C or G

<400> 307
cgttgtctct ggagatgrtg aatytatcct ttagagamnn cgtatagttt atcgactgc 60
tatctgg 67

<210> 308
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 36, 37
<223> n = A,T,C or G

<400> 308

cgttgtctct ggagatgrtg aatytatcct ttagmnntgg cgtatagttt atcgactgc 60
tatctgg 67

<210> 309
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 33, 34
<223> n = A,T,C or G

<400> 309
cgttgtctct ggagatgrtg aatytatcct tmnagatgg cgtatagttt atcgactgc 60
tatctgg 67

<210> 310
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 30, 31
<223> n = A,T,C or G

<400> 310
cgttgtctct ggagatgrtg aatytatcmn ntagagatgg cgtatagttt atcgactgc 60
tatctgg 67

<210> 311
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 27, 28
<223> n = A,T,C or G

<400> 311
cgttgtctct ggagatgrtg aatytmnct ttagagatgg cgtatagttt atcgactgc 60
tatctgg 67

<210> 312
<211> 58

<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 41, 42
<223> n = A,T,C or G

<400> 312
ataggtgttt ccattactat gtacaatgct ctgactagam nngcaggaga tggaggcc 58

<210> 313
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 38, 39
<223> n = A,T,C or G

<400> 313
ataggtgttt ccattactat gtacaatgct ctgactmnnc ctgcaggaga tggaggcc 58

<210> 314
<211> 58
<212> DNA
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<220>
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<221> misc_feature
<222> 35, 36
<223> n = A,T,C or G

<400> 314
ataggtgttt ccattactat gtacaatgct ctgmnnagac ctgcaggaga tggaggcc 58

<210> 315
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 32, 33

<223> n = A,T,C or G

<400> 315

ataggtgttt ccattactat gtacaatgct mnactagac ctgcaggaga tggaggcc 58

<210> 316

<211> 58

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 316

ataggtgttt ccattactat gtacaatmn ctgactagac ctgcaggaga tggaggcc 58

<210> 317

<211> 58

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 317

ataggtgttt ccattactat gtacmnngct ctgactagac ctgcaggaga tggaggcc 58

<210> 318

<211> 58

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 318

ataggtgttt ccattactat gmnaatgct ctgactagac ctgcaggaga tggaggcc 58

<210> 319

<211> 58

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 319

ataggtgttt ccattactmn ntacaatgct ctgactagac ctgcaggaga tggaggcc 58

<210> 320

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 41, 42

<223> n = A,T,C or G

<400> 320

tggcttctgc aggtaccatt ccaaataggt gtttccattm nnatgtacaa tgctctgact 60

<210> 321

<211> 60

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> 38, 39

<223> n = A,T,C or G

<400> 321

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<210> 322

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 35, 36

<223> n = A,T,C or G

<400> 322

tggtctctgc aggtaccatt ccaaataagggt gttmnatta ctatgtacaa tgctctgact 60

<210> 323

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 323

tggtctctgc aggtaccatt ccaaataagggt mnntccatta ctatgtacaa tgctctgact 60

<210> 324

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 324

tggtctctgc aggtaccatt ccaaataamnn gtttccatta ctatgtacaa tgctctgact 60

<210> 325

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 325

tggtctctgc aggtaccatt ccaamnnnggt gtttccatta ctatgtacaa tgctctgact 60

<210> 326
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 23, 24
<223> n = A,T,C or G

<400> 326
tggcttctgc aggtaccatt cmnntaggt gtttccatta ctatgtacaa tgctctgact 60

<210> 327
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 20, 21
<223> n = A,T,C or G

<400> 327
tggcttctgc aggtaccamn ncaaataagg gtttccatta ctatgtacaa tgctctgact 60

<210> 328
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 38, 39
<223> n = A,T,C or G

<400> 328
gaacctgtct gggactccag aaaaccggtt ggaaacmna tagatcagga gctgtgg 57

<210> 329
<211> 57
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 35, 36

<223> n = A,T,C or G

<400> 329

gaacctgtct gggactccag aaaaccggtt ggamnnttta tagatcagga gctgtgg 57

<210> 330

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 330

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<210> 331

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 331

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<210> 332

<211> 57

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

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<210> 333
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<221> misc_feature
<222> 23, 24
<223> n = A,T,C or G

<400> 333
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<210> 334
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<221> misc_feature
<222> 20, 21
<223> n = A,T,C or G

<400> 334
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<210> 335
<211> 57
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<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 38, 39
<223> n = A,T,C or G

<400> 335
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<210> 336
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 35, 36
<223> n = A,T,C or G

<400> 336
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<210> 337
<211> 57
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<221> misc_feature
<222> 32, 33
<223> n = A,T,C or G

<400> 337
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<210> 338
<211> 57
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<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 29, 30
<223> n = A,T,C or G

<400> 338
tgggggctga cggatccagc ccacaccmnn tccagaagtg ctgagtgaga acccaga 57

<210> 339
<211> 57
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<220>
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<221> misc_feature
<222> 26, 27
<223> n = A,T,C or G

<400> 339

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<210> 340

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 340

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<210> 341

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 341

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<210> 342

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 41, 42

<223> n = A,T,C or G

<400> 342

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<210> 343

<211> 60

<212> DNA

<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 38, 39
<223> n = A,T,C or G

<400> 343
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<210> 344
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 35, 36
<223> n = A,T,C or G

<400> 344
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<210> 345
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> 32, 33
<223> n = A,T,C or G

<400> 345
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<210> 346
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 29, 30

<223> n = A,T,C or G

<400> 346

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<210> 347

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 347

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<210> 348

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 348

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<210> 349

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 349

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<210> 350
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 41, 42
<223> n = A,T,C or G

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<210> 351
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 38, 39
<223> n = A,T,C or G

<400> 351
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<210> 352
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 35, 36
<223> n = A,T,C or G

<400> 352
cttggagatg gtgagcctgc tcttcagaga tggmngtag tattttattgt catcccacca 60

<210> 353
<211> 60
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 32, 33

<223> n = A,T,C or G

<400> 353

cttggagatg gtgagcctgc tcttcagaga mnngtttag tattttattgt catcccacca 60

<210> 354

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 29, 30

<223> n = A,T,C or G

<400> 354

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<210> 355

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 26, 27

<223> n = A,T,C or G

<400> 355

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<210> 356

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 23, 24

<223> n = A,T,C or G

<400> 356

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<210> 357

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<221> misc_feature

<222> 20, 21

<223> n = A,T,C or G

<400> 357

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<210> 358

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic antibody mutation

<400> 358

Phe Gln Ser Ser His Phe Pro Trp Thr

1

5

<210> 359

<211> 66

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> (1) ... (66)

<223> n = A,T,C or G

<400> 359

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aacatc

60

66

<210> 360

<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
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<223> n = A,T,C or G

<400> 360
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aacatc 66

<210> 361
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> (1)...(66)
<223> n = A,T,C or G

<400> 361
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aacatc 66

<210> 362
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
<222> (1)...(66)
<223> n = A,T,C or G

<400> 362
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aacatc 66

<210> 363
<211> 66
<212> DNA
<213> Artificial Sequence

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<221> misc_feature

<222> (1)...(66)

<223> n = A,T,C or G

<400> 363

cttggtgccc tggccgaacg tccacggaac mnntgaacct tgaaagcagt aataaactcc 60
aacatc 66

<210> 364

<211> 66

<212> DNA

<213> Artificial Sequence

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<223> n = A,T,C or G

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aacatc 66

<210> 365

<211> 66

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<223> n = A,T,C or G

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aacatc 66

<210> 366

<211> 66

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<223> n = A,T,C or G

<400> 366
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aacatc 66

<210> 367
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
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<221> misc_feature
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<223> n = A,T,C or G

<400> 367
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aacatc 66

<210> 368
<211> 75
<212> DNA
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<220>
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<221> misc_feature
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<223> n = A,T,C or G

<400> 368
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agcacagtaa tacgt 75

<210> 369
<211> 75
<212> DNA
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<221> misc_feature
<222> (1)...(75)
<223> n = A,T,C or G

<400> 369
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agcacagtaa tacgt 75

<210> 370
<211> 75
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<213> Artificial Sequence

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<221> misc_feature
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<223> n = A,T,C or G

<400> 370
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agcacagtaa tacgt 75

<210> 371
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<223> n = A,T,C or G

<400> 371
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agcacagtaa tacgt 75

<210> 372
<211> 75
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<223> n = A,T,C or G

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agcacagtaa tacgt 75

<210> 373
<211> 75
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<223> n = A,T,C or G

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75

<210> 374

<211> 75

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> (1)...(75)

<223> n = A,T,C or G

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agcacagtaa tacgt

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<210> 375

<211> 75

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> (1)...(75)

<223> n = A,T,C or G

<400> 375

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60

75

<210> 376

<211> 75

<212> DNA

<213> Artificial Sequence

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<223> primer

<221> misc_feature

<222> (1)...(75)

<223> n = A,T,C or G

<400> 376

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agcacagtaa tacgt 75

<210> 377

<211> 75

<212> DNA

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<223> n = A,T,C or G

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agcacagtaa tacgt 75

<210> 378

<211> 75

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<223> n = A,T,C or G

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<210> 379

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<223> n = A,T,C or G

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agcacagtaa tacgt 75

<210> 380
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agcacagtaa tacgt 75